

SANATORIA
FOR CONSUMPTIVES
BY
VON JARUNTOWSKY
TRANSLATED BY
E. CLIFFORD BEALE

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R. P. Cooper
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THE PRIVATE
SANATORIA FOR CONSUMPTIVES

AND THE
TREATMENT ADOPTED WITHIN THEM.

BY

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TRANSLATED WITH PERMISSION OF THE AUTHOR,

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TRANSLATOR'S PREFACE.

IN offering this translation of Dr. von Jaruntowsky's monograph I have been chiefly influenced by the fact that so little effort is made in this country to deal with Consumption as a curable disease. Pathological evidence has long ago shewn that Nature can effect its cure and, as will be found in the following pages, much may be done to aid the processes of Nature if only the Doctor and the Patient can work together to that end, under favourable conditions. The accumulated evidence of the last 15 years has shewn that by such co-operation not only temporary but lasting cure may be effected, and if it were only more widely recognised that this method of treatment as described by Dr. von Jaruntowsky can be as well carried out in English as in German and Swiss Sanatoria it is probable that as good results would follow. That all English Physicians would be agreed as to the value of the methods employed in the Sanatoria abroad is hardly to be expected, nor would all English patients be prepared to submit to the somewhat severe discipline which is enforced in many of them, but in all essential points the treatment would be the same, although applied in a manner more adapted to the national peculiarities of the patients. Knowing from personal observation how much may be done to check the progress of Consumption even in the crowded wards of a large Metropolitan Hospital, I feel assured that very much more might be done by the rational application of the rules laid down in the following monograph, if the necessary conditions could be provided in the form of Sanatoria under close medical supervision. Among the hills of Surrey, Sussex and Hampshire are many localities which possess most of the climatic requirements and surroundings demanded by Brchmer and other pioneers of Sanatorium treat-

ment. No more suitable climate exists for Consumptives than that of a fine English Summer, and ample provision can always be made to guard against the dangers of the changeable weather of the colder months. But before any such desirable advances are made it is necessary that not only consumptive patients, but also their medical advisers should be acquainted with the methods which have been adopted and the success which has been obtained in the Sanatoria on the Continent. If Dr. von Jaruntowsky's concise and practical monograph should be the means of stimulating effort in the same direction in this country, I shall be amply repaid for the trouble of translating it.

E. C. B.

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INTRODUCTION.

"Omne malum nascens facile opprimitur,
inveteratum fit plerumque robustius."

Cicero.

Consumption makes its appearance in no over-mastering raids like the dreaded Asiatic Plague and with none of the horrors of a sudden catastrophe, and yet no other disease affords an equal number of victims, nor does any other in equal degree spread want and misery from prolonged illness through wider circles. Ruehle rightly described this insidious antagonist as the hereditary enemy of mankind. For statistics teach that no less than one-seventh of the deaths may be referred to pulmonary tuberculosis, and Bollinger asserts, on the strength of anatomo-pathological discoveries post-mortem, that nearly every third individual has to withstand some tuberculous attack during life.

From the earliest times therefore a remedy has above all things been sought for against this most dangerous disease. But however different the method suggested by the desire to master the wily enemy; however untiringly those remedies already nominally authenticated were transformed and put forward again with new and attractive titles to the seekers after help, however great the enthusiasm with which the efforts of the would-be helpers was met, still again and again the enemy proved itself unconquered by all these attacks. Of all the numerous remedies hardly one can claim to be of real value, and as Gerhardt has said "The treatment of Consumption with drugs has gone into utter bankruptcy."

To-day the one and only rational method of treatment founded on observed facts is the hygienic-dietetic method which endeavours to heal the local disease in the lung by strengthening the general organism. The history of this method is actually as old as the History of Medicine. Even Hippocrates (450—377 B.C.) in whose writing we find the first account of Consumption and observations of its healing, recommends a residence in suitable climatic

conditions and good living for consumptive patients. Among later authors, Celsus, Pliny the elder, and Galen agree as to climatic treatment. Celsus is inclined to praise the enjoyment of sea-air. Pliny the elder, praises the effects of the Sun's rays and of pine forests. Galen requires a residence in pure air and sends his patients into the mountains for the milk cure. The Arabian School claims the same method as its own. Avicenna sent his patients to Crete in order to cleanse the ulcers on the lungs and to guard against catarrhs.

Thus for the last 2,000 years Hygiene and Dietetics have been recognised as the fundamental requirements for the successful treatment of phthisis. Nevertheless, according to Ullersperger (1867) there are barely 200 cases of cure recorded since the time of Hippocrates in medical literature, and throughout a long period phthisis was regarded as incurable. As the cause of this remarkable fact, the meagre knowledge of the real nature of the disease must be taken into consideration, and especially of the anatomical and pathological changes which occur in phthisis in such extraordinarily different forms. Thus it was only by means of careful investigation of the pathological anatomy of consumption and of the cases of healed phthisis observed post-mortem, that the conviction of the curability of phthisis could be again confirmed in general belief. "Pathological Anatomy," says Carswell, "has perhaps never afforded stronger evidence of the curability of a disease than in the case of phthisis."

To first point out the way in which these cures may best be attained was reserved for Brehmer, who in the year 1854 enunciated from Goerbersdorf the principles of rational hygienic and dietetic treatment, at the same time demonstrating their truth by the most brilliant practical results. * "Goerbersdorf is the cradle of the mountain health resorts and of the hardening open-air treatment in Europe, with a judicious mixture of hydrotherapeutics. Dr. Hermann Brehmer has the merit of having introduced this combination in a systematic manner, coupled with the strict supervision of the patients, essential in the hygienic as well as therapeutic management."

This method of Brehmer's was undertaken with many modifications by subsequent therapeutists and became the basis of treatment in all the later climatic establishments, but above all in the private sanatoria. The strict application of the treatment in the latter has of late years become the subject of universal attention and recognition in all professional circles, and it is destined doubt-

*Weber. Croonian Lectures on Hygienic and Climatic Treatment of Chronic Pulmonary Phthisis. 1885.

less to become the treatment of the future. In the opinion of Leyden, Climatic Cures in Altitudes and on the Ocean, Milk Cures, &c., were known to, and practised by the Ancients, and at no period has there been any lack of vaunted specifics for Consumption. But the introduction of treatment in specially constituted institutions essentially on the principles of the hygienic-dietetic method, is a work of recent times, and to the late Dr. Brehmer, the Founder and for many years the Director of the Sanatorium at Goerbersdorf, the credit must without hesitation be given as having paved the way to a real advance in this direction.

"He was the Originator of that method of treatment of "Pulmonary Consumption, which at the present day has received "the fullest amount of recognition, and to which the merit will be "awarded of having proved that the disease is actually curable. "Undoubtedly it is with this method of treatment that the best "results are to be achieved."

Among the Sanatoria founded upon Brehmer's model, Falkenstein may be mentioned first. This institution, situated in the Taunus, was until recently conducted by Dettweiler, a former assistant of Brehmer's, who expanded the methods derived from Goerbersdorf and has in this way contributed in no small degree to the resources of modern therapeutics in Phthisis.

In addition, may be mentioned; Reiboldsgruen in Saxony (Dr. Driver's Establishment), St. Blasien in Baden (Dr. Haufe's Sanatorium) Dr. Roempler's Institution in Goerbersdorf, and the recently opened Hohenhonnef on the Rhine. Smaller Sanatoria are Altenbrak and St. Andreasberg in the Harz, Pueckler's establishment in Goerbersdorf, Heidschloss near Ploen, in Holstein. Nordrach in Baden, Schoemberg in Wurtemberg, and Rehburg, near Hanover (Dr. Kaatze's Institute and Sanatorium Michaelis). In addition to these, which are all in Germany, mention must be made of the Establishment founded at Davos by Dr. Turban, in 1889, and the Sanatorium at Arosa, both in Switzerland.

According to Dettweiler's calculation, there are in Germany alone, 1,200,000 Consumptives. In comparison with these, how diminutive is the number of those who can take a share in the benefits of Sanatorium treatment, especially when one considers that of the whole 1,200,000, only a relatively small percentage can be taken into consideration, on account of their limited means. The expenses of Sanatorium treatment are not inconsiderable, and having regard to this fact, there have been for a long time in England, Consumption Hospitals established, which are intended

exclusively for the benefit of Consumptives of the poorer classes. In this respect Dettweiler was the pioneer in Germany, when, on his initiative, the first People's Sanatorium was opened in Falkenstein in the year 1892. Since then, similar efforts have been pushed forward in all directions. A comprehensive Sanatorium has been founded at Malchow, near Berlin; a similar one has been designed in Vienna, and His Majesty the King of Saxony has become Patron of a Society, which has for its object the erection of a People's Hospital at Reiboldsgruen.

The main features of Sanatorium treatment, as indeed of consumption treatment in general, are Climate, Hygiene and Dietetics.

1.—Climatic Treatment.

The climatic treatment requires, according to Brehmer,* that the institution should be situated amongst hills and in an immune district—*i.e.* a district whose native inhabitants are relatively free from phthisis.

In laying down these conditions Brehmer starts with the conviction that the chief task in the treatment of Consumption lies in the strengthening of the heart. The heart of the Consumptive is too weak to nourish the lungs and therefore the general organism, sufficiently. Strengthening of the heart is only to be achieved among the hills where the diminished barometric pressure stimulates the heart's action and with that is associated an improvement of nutrition. The prospects of obtaining such results are naturally greatest in those districts in which Consumption occurs either not at all or only very seldom, *i.e.* in immune districts. The immunity of any place depends according to Brehmer (1) on its elevation above the sea; (2) on the latitude. Thus for Germany an elevation of 500 metres is sufficient, while in Switzerland it must be at least 1,500 to 1,700 and at the Equator 3,000 to 4,000 metres.

This theory of Brehmer's was for a long time the subject of the most lively scientific controversy and even if it has not been able to hold its own against all the attacks that have been made upon it, nevertheless the principle is now well recognised that Tuberculosis of the Lungs occurs less often in the hills than on the plains, and that a certain elevation above the sea exercises a favourable influence upon its course. In this connection the observations made by Jourdanet in Mexico are instructive. He found that at an elevation of over 2,000 metres, hardly any cases of

* Brehmer, Die Therapie der chronischen Lungenschwindsucht, 1889.

phthisis occurred, but observed on the other hand that a disposition to tuberculosis acquired elsewhere in youth generally disappeared on removal to the mountains, and was able frequently to verify cases of healing in patients who had brought the disease with them from France.

Gauster observed the same thing in the Austrian Alps. He also found that in certain districts of definite geological formation over 730 feet above sea level, Consumption was infinitely rare and established the fact that cases brought from elsewhere were healed. In Goerbersdorf which has over 900 inhabitants and lies 561 metres above sea-level, Consumption very rarely occurs. In the course of 26 years, *i.e.* 1854 to 1880 hardly 5 of the actual inhabitants of the place died from pulmonary tuberculosis, (or annually 0.18).*

Most of the therapeutists of to-day lay the chief stress in the climatic treatment of consumption upon purity of the air. By purity of the air according to the most recent investigations and especially Pasteur's admirable work, is to be understood its freedom not only from inorganic but also organic particles. Everyone knows that superficial ulcers which are protected from impurity of air and especially from micro-organisms by means of aseptic dressings are much more quickly and perfectly healed. It is obvious that the tubercular ulcerations in the lungs also may be expected to become cleansed and healed sooner in a pure aseptic atmosphere than in air which is saturated with micro-organisms. The important part played by the latter in association with the tubercle bacillus in the progress of phthisis has been repeatedly demonstrated of late years. The question therefore as to where the purest air is to be found—that is to say the air which is relatively freest from micro-organisms—becomes in consequence of special importance. For the answer to this question, bacteriological investigations such as those of Miquel are significant. These go to prove that the air in towns and their environs swarms with micro-organisms but that among the mountains their number becomes steadily less in correspondence with the height of any given area above the sea-level.

To ensure purity of air it is necessary in the second place that there should be freedom from inorganic particles. The air must above all be free from dust. For dust not only facilitates the carriage of bacteria but when it has penetrated into the lung exercises mechanical irritation of inflamed parts and causes cough. Unluckily dust is to be found everywhere, even on the high seas,

* Brehmer l. c.

but still it cannot be disputed that mountain air must be less infiltrated with dust than that of the plains. If the surface of the mountain, covered with wood and heath be but little adapted to the production of dust, and especially if of certain geological formation, the frequent rains of summer contribute essentially to the purity of the air while in winter till late in the spring the production of dust is excluded by the presence of ice and snow. In accordance with the foregoing considerations Brehmer further makes it a condition, in order to protect the consumptive patients from the harmful influence of dust, that the sanatoria shall be situated at a distance from public traffic, nor may they be placed in the neighbourhood of factories which may pollute the atmosphere with dust and soot.

It is therefore clear that pure air, *i.e.* air that is free from dust and micro-organisms, and away from public traffic is to be found most readily amongst the mountains. In spite of all this, when considering the question of setting up public sanatoria, it has frequently been decided to establish them in the neighbourhood even of large towns, although everyone is agreed that purity of air must be regarded as the chief requirement in the treatment of phthisis.

Besides purity of air there are other factors which constitute the character of mountain climates. Of these, the most important are: (1) Dryness of the air with abundant rainfall; (2) Frigidity or freshness of the air with increased diathermancy; (3) rarefaction of the air with low barometric pressure; (4) considerable proportion of ozone.

Even at the present day it has never been established upon a purely scientific basis, which among all these factors is the most important in dealing with phthisis. Sée declares that atmospheric purity or relative freedom from micro-organisms is the chief requirement: Liebermeister regards the increased warmth of the sun's rays as the determining factor, Brehmer lays chief stress upon the diminished barometric pressure, and finally, Gauster declares that the presence of ozone is the most important of all. It is with just as little certainty established, how all these different factors act upon the patients. Quite recently attention has been turned especially to the changes which take place in the blood.

The investigations of Viault in the Cordilleras (4392 m.), of Egger in Arosa (1800 m.), Wolff and Koeppe in Reiboldsgrün (700 m.), of Meischer's pupils in Switzerland, and of the Author

and Schroeder at Goerbersdorf, have shewn that in all cases of healthy or sick people coming from the plains to the hills, a rapid increase of red corpuscles and of hæmoglobin has taken place. As a cause of this phenomenon, the diminution in the relative pressure of oxygen in the mountain air has been assumed. Although the physiological problem of the action of mountain climates is far from being solved thereby, still these investigations have given at any rate the explanation of one at least of the factors, namely the diminished pressure, and have also proved that mountain climates do exercise a positive influence upon the organism. Clinical observations also support this. How frequently one has the opportunity of seeing that night sweats, which up to that time had resisted every different remedy, often disappear in the mountains even in the first night; that the appetite, which in the plains was wanting even for the best cooking, increases in the hills with the first day, and digestion becomes easy; that fever, which may have continued for weeks, disappears in a short time.

With the removal of these cumbering symptoms, the next favourable result of the mountain climate is to be noted in the steady increase of general strength, greater freedom of respiration, decline of cough and expectoration and finally disappearance of the pathological changes in the lung, which often enough go on to actual healing. In the face of these proven facts it must not be held to be the fault of the action of the mountain air if in isolated instances no improvement of condition can be recognised. These cases are generally in the late stages of phthisis; it may happen with them that a change for the worse in their general condition, and a marked increase in general weakness may set in. These are just the cases in which the action of the mountain climate is too strong for the already reduced powers of the patient. It only remains to be discussed what height is requisite for the mountain climate. As already mentioned, this must depend upon the latitude of the given place, the more southerly its latitude the higher must be its elevation above the sea-level. *Brehmer demands 500 metres for Germany, 1,500 to 1,700 for Switzerland, 3,000 to 4,000 for the Equator, †Weber agrees with him in almost identical figures, while ‡Liebermeister would be satisfied with an elevation of 1,000 metres for Switzerland and 2,000 for the Tropics. As a result of the foregoing discussion of mountain climates, it is firmly established that apart from the, as yet, undecided question as to the form and manner of its influence, the advantageous operation of mountain air on the Consumptive must be regarded as an

* l. c.

† l. c.

‡ Deutsche Medicinische Wochenschrift, 1888.

undisputed fact, which must therefore be reckoned with in dealing with phthisis under all conditions. Following upon this therefore, it is also a primary condition in the climatic treatment of pulmonary tuberculosis in private sanatoria, that these institutions should be situated in the mountains.

Therefore I think that the view expressed by one therapist is without foundation, according to which it is a matter of indifference where we treat Consumptives, but that all depends upon how they are treated. From what has gone before, it has been made sufficiently clear that the first factor is just as important as the second. Sanatoria situated in mountainous districts present a further advantage, in that patients can begin the course of treatment at any time they please, and are not obliged to break it off at the end of the season, as is the case in other climatic health resorts with a definite winter and summer season. In the treatment of the sufferer from pulmonary tuberculosis, one must always start from the definite principle that the patient should be kept, until his cure is complete, at the place which suits him and where he is manifestly improved. One can hardly imagine anything more feckless or more harmful to the patient's health than constant wandering about and perpetual change of scene and climate. Doubtless the idea is widely disseminated that wintering in the mountains is too severe for Consumptives, and that cold air must be harmful. This notion is entirely erroneous; cold mountain air acts very favourably upon them, not only upon their general health but also on the morbid process in their lungs. As regards Goerbersdorf for example, I can speak from my own experience, that the winter treatment is just as successful as the summer treatment; and Davos, which from year's end to year's end can shew such satisfactory results, is visited in winter by preference. Beyond this, the fact is generally recognised that in northern countries tuberculosis occurs less frequently amongst the actual native inhabitants than in the more southern lands. There are doubtless, many patients for whom a mountain climate is less indicated, especially in the winter time. These are chiefly they who are attacked with the so-called erethic form of phthisis such as the very anæmic, who are particularly susceptible to chills; for such as these southern climates are more advisable. With respect to the latter, one cannot deny that they possess certain qualities which in suitable cases act favourably upon the course of the disease, but that for the majority of cases, the sojourn in mountain climates more often gives better

and more lasting results than the milder southern climates, is at the present day a ruling axiom amongst Physicians.* Jaccoud's remark is much to the point—"The altitude climates have a direct recuperative action upon the general organism and an equally beneficial influence upon the activity of the fluids of the body and on the circulation of blood in the affected organs; consequently these climates, take positive part in the healing process, they may be active or modifying climates—in a word they are therapeutic agents." This direct action upon the activity of the respiratory organs is wanting in the milder climates; they possess but little or no stimulating influence on nutrition or general vigour; they act directly in so far as they protect against any accidental risks, and maintain the previous condition unimpaired, and they render it possible to combine these advantages with life in the open air, but such climates exercise no influence upon the healing process. They are passive or conservative climates, no longer active agents, but rather adjuncts to treatment. Weber says (l. c. p. 79.) "We may in some points compare climates with medicines. There are such medicines as Morphia, which soothe the cough and procure sleep, but check the appetite and nutrition in many people. Antipyrin has a wonderful power in subduing pyrexia, but in almost all my trials of its effect on the pyrexia of consumptive patients it has entirely suppressed the appetite."

"Such medicines ought therefore to be avoided in the majority of hopeful cases of Phthisis because the improvement of the nutrition is the first demand. So there are agreeable climates which soothe the cough but diminish the appetite and the inclination to take exercise, and can therefore be recommended only in exceptional cases. On the other hand bitter remedies and tonics do not soothe the cough, but if they improve the appetite, they often exercise a beneficial influence on the course of Phthisis. In the same way cold does not soothe cough, but on the contrary sometimes produces it at first, but if it improves the appetite of the consumptive person and enables him to take more exercise, it improves the nutrition and thus exercises a beneficial influence on the course of Phthisis." The treatment of patients in Southern climates would doubtless shew better results if the local conditions were more in accordance with the patients' requirements, or if the medical supervision were stricter, in a word—if private sanatoria for Consumptives were to be established there also. The Author arrived at this conviction in the course of a journey which he recently made through the so-called Southern Health Resorts. To

* Curabilité et traitement de la phthisie pulmonaire. 1881.

the question of why no such Sanatoria exist along the Riviera, Ramdohr ("Arco und die Riviera") gives somewhat the following answer, "One may indeed regret that no private Sanatorium is to be met with along the Riviera, because for a certain class of patients well-disciplined institutions would meet a distinct want to counteract the unhealthy excesses to which patients are inclined and for which they find endless opportunity on the Riviera. But such undertakings would probably be very unprofitable and nothing can be kept going without supplies."

The greater number of visitors who pause along the Riviera is composed of wealthy families who would hardly care to submit themselves to confinement in a private sanatorium, while the number of those who would go into such Institutions would not suffice to maintain the Sanatorium at a profit, if one looks the fact in the face that the Season on the Riviera does not last twelve months, but barely six. Mention must however be made of projects that have recently sprung up to introduce so-called "sea-sanatoria"—that is to say, to rent special vessels for the purpose, on board of which, patients might pass the winter months under medical supervision, and especially on the Mediterranean Sea.

Although, there can be no doubt that sea-voyages are often very suitable for Consumptives, and especially those in early and convalescent stages, still, it is to be feared that this method will meet with difficulties in its practical application, and that it will after all prove to be less rational than the treatment on terra firma.

II.—Open-Air Treatment.

Having demonstrated by the foregoing that a mountain climate is one of the first requisites for a sanatorium for Consumptives, we may now turn to the consideration of the actual climatic treatment—that is to say of treatment by the help, or by means of, open air.

We must pre-suppose that the site on which the Sanatorium stands, has been carefully selected. Mountain valleys are the most suitable sites, especially when surrounded by hill sides and sheltered from wind, which, in Brehmer's judgment, is a veritable poison for the Consumptive.

As far as the actual climatic treatment is concerned, it rests essentially on the principle of allowing the patient to spend as much of his time in the fresh open air, as possible, provided that it be spent in the way to be exactly prescribed by the medical adviser.

The enjoyment of open air is a remedy of uncommon value if it be employed rationally and according to the state of the patient's health, but which, if it be entrusted to the patient's own fancy, may bring about a great deal of harm. Patients who come into the mountains for treatment, are generally inclined to mis-use the enjoyment of fresh air which has been recommended for them, and so it not unfrequently happens that hæmorrhages and other mishaps occur in consequence of excessive hill-climbing at the outset of their stay in the mountains, by which their condition is made considerably worse. Hence it is important that the Physician should from the very first point out to the patient the dangers that may ensue from too severe exertion, and that he should lay down for him with precision, the exact time and place of his stay in the open air, and should supervise the carrying-out of his instructions. In private sanatoria where patients, whether they like it or not, come immediately under medical supervision, this is more easily managed than in public health resorts where patients are more or less free from medical control. As to the various ways in which patients should employ their time in the open air, these must depend essentially upon their state of health. As a general rule we may here divide patients into two categories, namely those who are severely ill, in whom bodily vigour is already very much reduced and in whom febrile conditions are present, and those only slightly ill whose general condition is still comparatively good. But the principle holds good as well for the former as for the latter class that they should remain in the open air as much as possible. But while the former should preferably remain lying down, and as far as possible avoid any movements during the hours when the temperature is high, the latter ought to spend some hours daily in walking or methodical hill-climbing, and only rest in the sitting or lying position in the intervals between the walks.

Some authors, Dettweiler for instance, lay the chief stress in the climatic treatment of consumptive patients, upon lying down in the open air, while others, and notably Brehmer, attach great importance to methodical hill-climbing. Volland of Davos,* who regards anæmia of the apex of the lung as an etiological factor in tuberculosis even assumes that by constant recumbence, the blood supply to the apex is increased, and that the nutrition of the diseased parts is thereby favourably influenced.

*Die Behandlung der Lungenschwindsucht in Hochgebirge. 1889.

III.—Treatment by Rest.

Treatment by rest in the open air may be best carried out in the summer time amongst pine tress, either on comfortably padded deck chairs or in hammocks, but during unfavourable weather, and also in winter, on covered Balconies, in Pavilions or in Lounges (Liegehalle) specially fitted up for the purpose. In Sanatoria, which do not possess such arrangements, the serious cases with febrile symptoms, should recline in bad weather and in winter in a room with open windows—which may remain partly, or wide open during the night also, according to the conditions of the weather. This system of rest treatment has been brought, especially by Dettweiler, so such a pitch of perfection, that his patients are able with a few exceptions, to spend from seven to eleven hours daily in the open air, viz ; from early morning till late evening, and that in spite of Rain, Fog and Snow, and of cold reaching to—12°.

Under this form of open-air treatment, the general condition of the patient is improved usually after a very short time ; appetite increases, night sweats disappear, sleep is improved, and the fever begins to abate. Upon that, one may allow the patient to take moderate exercise on level ground in the open air, during the hours of freedom from fever. Systematic hill-climbing must only be recommended when the fever has entirely subsided, and the general condition is improved.

IV.—Hill-Climbing.

Walking exercise, and especially hill-climbing, which, as already stated, may be employed from the outset of the treatment in mild cases, is an extremely important factor in dealing with consumption. Moderate bodily exercise has in such cases not only an exceedingly curative action on the organs of respiration and circulation, particularly the heart, but it brings a favourable influence to bear upon the appetite, the digestion, and absorption, and hence upon general nutrition ; upon the activity of the muscles, the nerves, and the skin, in a word, upon nearly all the functions of the human organism. But, while on the one hand moderate bodily exercise may be of infinite value to the consumptive, so on the other hand, an unreasonable amount of exercise may be very harmful, since it may induce overstrain of the heart, and as a consequence, a considerable deterioration of the general health.

On this account, therefore, every patient for whom hill-climbing is prescribed, must be definitely told where, how far, and in what way he ought to go. In walking, and especially in walking up hill, patients ought to be careful to go very slowly, to breathe only through the nose, to refrain as far as possible from talking, and to rest from time to time, to guard against fatigue, and only to walk just so far or so long as the Physician has ordered. In this way the mild cases whose general condition is relatively good, may occupy several hours daily in walking exercise including methodical climbing. As regards the latter point, viz., the climbing; it does not appear to me that the view held by some Authors is justified, that this factor should be excluded from the treatment of phthisis for fear of overstraining the powers of the heart and lungs. If he abides rigidly by the foregoing regulations, the patient may altogether avoid fatigue in hill-climbing, more especially if the paths intended for his use are suitably laid out, that is when the gradient is not too steep and when seats are placed at frequent intervals to enable the patient to rest at any period.

V.—Pulmonary Gymnastics.

I must refer to yet one more factor of the open-air treatment, namely, forced respiration or lung gymnastics, the employment of which for consumptive patients has latterly been a subject of dispute. For, while some recommend this factor as a most important element in the treatment of consumption, others, such as *Brehmer, †Liebermeister and ‡Volland, regard lung gymnastics as more or less contra-indicated for Consumptives, as they argue from the conviction that, as in tubercular affections of other organs such as the larynx, the joints, the intestine, and the spinal column, rest to the affected part is the primary requirement in the treatment, so in the case of lung tuberculosis all extreme exertion of the affected part must be avoided. §Baümeler even assumes that by deep inspiration particles from caseous nodules may be carried into other hitherto healthy parts of the lungs, and thereby set up the so-called aspiration pneumonia. Although cases are only exceptionally met with in which forced inspiration has been followed by immediate deterioration of the general health, and especially by the above-mentioned form of lung inflammation, still, the condition of the patient must above everything else be considered before lung gymnastics are prescribed. From my point of view, lung gymnastics are particularly indicated for individuals

* l. c. p. 250.

† Deutsche Medicinische Wochenschrift, 1888. No. 50.

‡ l. c. p. 34.

§ Deutsche. Med. W'schft, 1893. No. 1.

who are disposed to tuberculosis before the appearance of any morbid signs in the lungs, and for convalescents in whom one may fairly assume that cicatrization or encapsulation of the affected part of the lung has taken place. One must invariably prescribe for the patient how he is to carry out the forced respiration. According to Dettweiler, it is the best way, during quite steady walking, to take five or six deep breaths through the nose every 100 or 150 paces, or, when lying down in the open air, 10 or 12 breaths every five or ten minutes. These then are the principal points which have to be regarded in the open air treatment of consumption. While exercising an extremely favourable influence over the course of the disease, this form of open air treatment has also the advantage that it involves the hardening of the general organism, which in dealing with consumption is of eminent importance. In no other affection are patients so sensitive to atmospheric changes as in tuberculosis of the lungs. But the slightest chill may bring about considerable change for the worse, just as it may often be the starting point of the outbreak of the actual disease. Sojourn in the open air combined with appropriate hydropathic measures, such as cold friction, and douches is the best and only means to make the body resistant to the influence of changes of weather, and to overcome the tendency to chills. By such means also an affected patient may, after the first attack has been overcome, protect himself against relapses, which, without them, are only too likely to occur.

VI.—The Internal Arrangement of the Sanatorium.

It remains yet to be noted that the internal arrangements of a sanatorium for Consumptives must fulfil all hygienic requirements if it is to be made possible for patients to respire pure fresh air even in the inner rooms of the institution. The patients' apartments must be roomy, lofty, inter-communicating if possible, and placed on the south side of the building, provided with large windows supplying a plentiful amount of light and air.

For the ventilation of the living rooms, valve-windows are the most suitable, which permit of ventilation without causing a draught. The floors and walls must be capable of thorough disinfection. Linoleum is best adapted for floor covering, walls should be painted with oil colours or inlaid with wooden panels or papered with washable papers. For the lighting of a sanatorium, the electric light is doubtless the most suitable, and for heating,

central stoves are the most serviceable (the low-pressure steam heating system of Bechem & Post, or hot-water heating). In the individual rooms the ordinary tiled stoves are sufficient, which can be heated with wood. Apart from the patients' private rooms, there must be well-ventilated, and in winter equably-warmed, public rooms for general use, reading rooms, dining rooms, &c., and besides all these, warm and cold winter gardens or colonnades, in which patients can obtain the necessary amount of physical exercise in bad weather, and finally, balconies, verandahs and pavilions for the carrying out of rest treatment. A system of pipes to furnish the institution with fresh spring water; drainage to carry off all impurities; cleanly, and in winter well warmed, closets; arrangements for the disinfection of bedding, clothing, &c., comfortable bath and douche rooms, lifts to save the patients the labour of stair-climbing; all these fittings should be possessed as completely as possible by a Sanatorium for Consumptives. The better and more convenient the organisation of the building, the better will be the treatment within it. "The outfit of the Establishment is the chief part of it," as Brehmer has rightly observed.

VII.—Dietetic Treatment.

Not less important than the Climatic, is the Dietetic treatment of Consumption. Loss of appetite, which often leads to repugnance to all kinds of food and the consequent loss of strength associated with visible wasting are often the first symptoms of the oncoming lung disease, and are in every case most unfavourable indications, which bring about a rapid development of the disease and have a fatal influence over its whole course. The increase of the appetite, the improvement of nutrition and the consequent strengthening of the enfeebled organism form the most important problems in the treatment of Consumption, on the solution of which the result almost always depends. But the best means of improving nutrition is mountain air, under the influence of which the appetite is generally stimulated to a high degree, to a much higher degree at any rate than can ever approximately be reached in the plains, by the most careful attention, the most skilfully selected foods or the most time-honoured tonics. Cases of course do occur in which mountain air does not suffice to raise the appetite, but in which in spite of long sojourn in the mountain climate the appetite remains always more or less limited. This occurs

especially in the anæmic type of patients who from childhood upwards have been small eaters and in whom as a consequence of insufficient activity a form of atony of the stomach has set in, just as in the case of patients in an advanced stage of phthisis in whom one may assume that pathological changes may have taken place in the gastric mucous membrane. In such cases it is useless to trust to the exclusive employment of drugs. The one and only form of treatment which is appropriate here is a systematic, thorough, dietetic treatment which depends upon gradually accustoming the patient to taking food, and teaching him exactly how and when he is to take it. It would be an error to allow free choice to the patient as to when, and how much he should eat, nor should too much attention be paid to his complaints and assurances that he is unable to take anything; equally would it be a mistake to try and spare the stomach by lessening the amount of food to be consumed; on the contrary, one must in these cases be careful to accustom the patient to taking food by degrees, by gradually increasing the quantity daily, and by trying all means to overcome the antipathy to eating, even, if necessary, *forcing* the patient to consume the prescribed diet. If successful, the general nutrition may be thus improved, even in many severe cases, and the further progress of the disease checked; in the more recent cases in which the motor weakness of the stomach is for the most part the cause of the loss of appetite, the stomach may be restored to normal condition by some such dietetic treatment. But this form of treatment can in fact only be carried out properly in private sanatoria where the Physician is able to control the Kitchen and always to superintend the patients during meals, whether in private apartments or in the common room, where he can join them at meal times.

Food for consumptives must be prepared in an appetising form but at the same time must be nourishing and rich in fatty constituents. The greatest possible variation is an obvious requirement. Next to meat foods, all forms of vegetables are to be recommended; Brehmer attaches great importance to them in the nutrition of consumptives. The nourishment must be taken frequently and never too much at a time, and thereby digestive disturbances may be avoided. It follows therefore that the French custom, which prevails in many climatic health resorts, and which consists of large meals with long intervals—the chief meal being in the evening—is not advisable for consumptives. The following is the most suitable distribution of meal times, and has been introduced into most of the sanatoria. The first breakfast early,

between 7 and 8 a.m., consisting of coffee, cocoa, tea, white or brown bread and butter, and a glass of milk. At 10 o'clock, lunch, consisting of from one to two glasses of milk, and bread and butter, or perhaps broth, eggs, &c., and a glass of wine to finish with. At 1 o'clock, dinner of soup, three courses, two of meat, with vegetables, and one of pudding, and one to two glasses of wine. About 4 p.m., afternoon tea (a repetition of the early breakfast). At 7 p.m., supper, of one or two courses, one cold and one hot with vegetables, one glass of wine with them. About 9 p.m., a glass of milk with two or three teaspoonsful of Cognac. In the case of patients who, on account of high fever or other cause, must observe a special diet, and in consequence of diminished appetite, are unable to take much at a time, the nutriment must be so distributed over the day that they take something as frequently as possible, preferably every hour. Milk, which plays an important part in the nutrition of the consumptive, must, so to speak, be held in reserve, so that the quantity to be taken each day need only be increased when, from this or that reason the appetite begins to fail. With normal appetite, four to five glasses a day are sufficient. The allotted quantity of milk should not be taken each time at a draught, but the patient ought rather to take it in small mouthfuls, and this must be particularly observed when milk, as for instance after hæmorrhage, forms the entire nourishment. In the latter case the patient ought to be persuaded to take a quarter of a glass exactly every quarter of an hour by the clock. In this way he may be able to take from three to four litres daily. If the patient cannot manage sweet milk, it may be replaced either with sour milk or buttermilk, or better still, with Kefyr. Since the richness of the milk depends upon the feeding of the cow, Brehmer rightly stipulates that every Sanatorium should have its own dairy, in which case the patients may without hesitation be supplied with raw milk, which is nicer and may be taken in larger quantities, and with more appetite than boiled milk.

Alcohol, which was first introduced into the treatment of Consumption by Brehmer, should be regarded solely as a drug, whose chief effect is to strengthen the heart and to hinder the reduction of albumen. Scientific investigations on the action of alcohol have shewn that as a rule "the medium doses, having a stimulant action hinder the reduction of albumen by 6—7 per cent., but that larger doses which produce a condition of depression and stupefaction, increase the reduction of albumen by 4—10 per cent." (Brehmer. l. c. 273). These figures indicate for themselves that in prescribing

alcohol, the daily dose must be accurately determined in accordance with the susceptibility of the patient and the condition of his health. Febrile patients can take and assimilate as a rule more alcohol than patients whose state of health is relatively good. As regards the form in which alcohol should be given, Brehmer regards wine as the most suitable, and especially Hungarian red or white wine, of which those only slightly ill may take about a third of a litre daily, but febrile patients as much as two-thirds of a litre. Brehmer regards beer as a drink but little adapted for consumptives, since according to the investigations of Buchner, Simanowski and Ogata, it impedes and delays digestion, while according to Voit, its nutritive value is relatively very slight. Only in exceptional cases should beer be ordered and then preferably in the evening before going to bed, when a glass of good beer (such as Pilsener, clear Munich or Culmbach beer) often has a soothing and soporific effect, and may thus take the place of other sleeping draughts. Brandy should, as a rule, be given only in diluted form either with water or milk. Neat brandy irritates the gastric mucous membrane too much, and may thus easily set up a catarrhal condition of the stomach after prolonged use.

VIII.—Disciplinary Treatment.

Having now laid down in the foregoing pages the most important principles of the hygienic-dietetic treatment of phthisis, and repeatedly called attention to the fact that such treatment can be carried out in the most effective manner in private sanatoria, it remains for us yet to have regard to another factor of sanatoria treatment, namely, to the disciplinary or psychological treatment of the patients, which, in the general management of consumption is of an importance which must not be undervalued. That tuberculosis of the lungs is a curable disease there can be no doubt at the present day; pathological anatomy affords the best proof of it, and the therapeutic results which have been achieved, point in the same direction. The cure is not easy however, and demands as a rule, much time and the exercise of the greatest patience and perseverance as well on the part of the patient as on the part of the doctor. And even then we cannot say for certain that the cure is complete, for it is well known that no ailment runs so uncertain and so unaccountable a course, and is so much inclined to relapse as phthisis. The slightest imprudence, of which the patient either from carelessness or ignorance may be guilty, may bring with it the most serious results, and may cause a marked change for the worse, or even a

recrudescence of the disease. If one would avoid this, one must not be content to combat only the disease and its symptoms, but must above all things instruct the patient how to protect himself under all circumstances, so that he is not only cured but may remain cured. The sanatorium for the consumptive ought therefore to be not only a hospital in which the disease is treated, but also a school in which the principles of hygienic-dietetic methods of treatment are so demonstrated to the patient, that they become as it were second nature to him, so that he may continue to use them from habit in after life, and in this way maintain his health. But for this, it is requisite that each patient, according to his individuality should be made more or less acquainted with the character of his disease. Many physicians, however, are still of opinion that one ought not to confide to the patient the truth about his complaint. "Catarrh of the lung" or "weakness of the lungs" may generally serve to indicate the disease. This, from my point of view, is not right. If one can definitely say that consumption is a curable disease, one may boldly tell the patient what he suffers from, and thus bring him to make up his mind to the self-sacrifice, which will be demanded of him in the course of treatment. This is naturally more difficult to carry out in private practice than in a sanatorium. There, as a rule, every patient knows that he suffers from tuberculosis of the lungs, a disease which is certainly curable, but which demands a long time for its cure, and the greatest patience on his part. But above all, the patient clearly understands that the disease is an infectious one, which is conveyed by bacilli, and that his sputum contains bacilli and that the disease may be spread further by him if he is not careful in the disposal of his own sputum. An explanation such as this, has amongst others, the advantage that the patient clearly instructed as to the nature of his disease, knows very well how he must dispose of his ejecta, not only during his stay in the sanatorium but also in his later life, and thereby forms a lesser danger to his surroundings than the patient to whom the nature of his disease is unknown. Ever since the discovery of the tubercle bacillus, great objection to sanatoria has been expressed not only by the laity but also among physicians, and is founded upon the fear of infection. This fear is however entirely baseless. It is precisely in such institutions where the patients as well as the staff are clearly instructed as to the danger which accompanies the careless disposal of sputum and where the obedience to instructions can be controlled by the doctors, that the danger of infection is far less than in many public health resorts where most of the resident consumptives are ignorant

of their disease and by careless disposal of their sputum may become a source of danger to those about them. The investigations of Cornet have made it clear that tubercle bacilli are not everywhere present in the air, but only in places which have been befouled with the ejecta of tubercular patients. In some of the Berlin Hospitals which are distinguished by great cleanliness, the search for bacilli in the dust has given negative results, while in other hospitals where hygienic arrangements were inadequate very positive results were obtained. It must, therefore, be admitted that, whether the danger of infection be as great as is assumed—an open question, since actual infection has only been proved in very few cases, it must at any rate be not greater in a hygienically arranged institution than anywhere else.

Some interesting statistical data concerning the inhabitants of Goerbersdorf have been brought forward by Brehmer. From the year 1781 till the year 1854, when the Sanatorium was founded, thirty of the inhabitants died of consumption, 0.41 per annum; in the period from 1854 to 1880, during which there were over ten thousand consumptives in Goerbersdorf, only five persons or 0.18 per annum died of the disease. It was, therefore, after the establishment of the Sanatorium, at a time when thousands of sick people were befouling the air with their sputum—for until 1880, they were much more careless with sputum than they are at present, as the bacillus had not then been discovered—that the number of fatal cases of phthisis became fewer than before.

The question next arises whether consumptives in all stages ought to be sent into sanatoria. From what has already been said, it is sufficiently clear that sanatorium treatment is not contra-indicated for patients at any stage, and that the serious cases just as much as the mild or even only threatened cases can be treated in sanatoria with good results. For the former, sanatorium treatment under constant medical control, offers the best hope of a beneficial result, while for the latter it affords the best possible opportunity for the patient to learn how best to take care of his health. In most cases it is best to begin at once with sanatorium treatment, and in fact, the earlier the better, for it is better, as Eichhorst says, to be many times too early, even unnecessarily so, in sending the patient to a sanatorium, than to be once too late. In practice, however, it is usually the other way. A large number of the patients who are sent into a sanatorium, consists of those who have already tried all manner of possible climatic health resorts and watering places without any success having been achieved, others again have waited at

home for the improvement that does not come, and only come to the sanatoria in a very advanced stage. It need hardly be said that for such patients any improvement or possible recovery demands a far longer stay, and a much greater amount of self-sacrifice than in the case of those who come at the outset of the disease. Patients in the last stages ought, however, to remain at home.

Private Sanatoria are especially advisable for young people who may be inclined to excesses which are prejudicial to health. In Sanatoria they are entirely deprived of any opportunities. But in order as far as possible to restrict from the Sanatorium life, everything which may be hurtful to the Consumptive, it is very much to be desired that only Consumptives should be received into the Institution, for whom one set of regulations will apply. For there are many amusements and occupations, such as card or billiard playing, various handicrafts, &c., which may very well be allowed to other patients, but which must be forbidden to the Consumptive, not to speak of the visits to the public-house, or of dancing, tobogganing, &c., and of all other such entertainments which are in the highest degree harmful for him. Intellectual occupations are the best suited for Consumptives, out of the hours of treatment. The reading of books and periodicals, some of which can be supplied from the Library of the Sanatorium, and others are laid out in the Reading Rooms. The study of foreign languages, for which opportunity is always offered in the cosmopolitan society of a Sanatorium is in itself an absorbing occupation.

Over and above this, the sojourn of the patients may be made agreeable by means of some of the less energetic games, such as Draughts and Dominoes, by dramatic performances in large airy salons, by concerts in the Park, by excursion parties, or skating parties in the winter time, and by many other such amusements, against which there is nothing to be said from the medical point of view.

Over and above the fear of infection, which, as I have already endeavoured to explain, is no greater in a sanatorium than in an open health resort, some people consider it an important objection to sanatorium treatment, that the association with the serious cases must have a depressing effect upon those who are but slightly affected. But this proposition also rests upon no real foundation. It is precisely in such institutions where the hours and exercises of the advanced cases can be exactly fixed by the Doctor that the severe and the mild cases can be kept altogether apart. Besides this, I have observed that the depressing effect which may be at

first sight induced in the presence of advanced cases, very soon wears off, and that the patients who find themselves surrounded by others suffering from the like disease, feel the sadness of their position much less than if they were surrounded by healthy persons who are able to do things which their disease will not permit them to attempt. "Here he sees," to use Braun's words, "not his ailing self alone, but ailing human nature; he feels himself to be a part of diseased humanity and a fellow-bearer of the common lot, and in this way becomes more easily reconciled than was possible for him in his solitary isolated life, &c." The relation in which he stands to the Medical Officer of the Institution will contribute not a little to this end, if he finds in him not only an adviser, but also a friend, who gives him comfort and courage, and keeps him from overdoing himself. The position of the Medical Officer is on this account by no means easy. It requires, in addition to an accurate knowledge of the disease, a thorough devotion to his calling and a fine perception of the responsibility which rests upon him in dealing with Consumptive patients. The Sanatorium must be all in all to him, "his Religion, his Politics, his Despair and his Delight," as Dettweiler has expressed it.

IX.—Symptomatic Treatment.

Having explained in the foregoing all the most important principles of sanatorium treatment in general, and passing now to the special or symptomatic treatment, we must once more place in the forefront the argument that, like every other disease characterised by dangerous symptoms which is best treated in a clinic under constant medical supervision, so also Consumption with its numerous and often unaccountable symptoms requires strict clinical treatment. And to this end the Sanatorium with its various appliances offers the best means.

Fever.

The greatest enemy of the consumptive patient is undoubtedly high temperature, and the counteraction of it becomes the chief task of the Physician who undertakes the treatment of consumption. But, as we as yet possess no specific remedy, we are often powerless in the presence of this foe which gradually undermines the organism of the sufferer until at last it induces death. Relatively speaking, the most successful remedy against fever is continued rest, a residence in fresh, pure, and if possible, cool air, mountain air by

preference, and good nourishment. Of special remedies, mention should first of all be made of Alcohol, which may be most effectively given in the form of wine. Wine in many cases obviously reduces the temperature and checks the reduction of albumen. Ice is also very useful, which, if placed in small bags on the chest in the cardiac area, uses up a certain amount of body warmth as it melts, and thus reduces it, while it soothes the patient and strengthens the heart's action. Of drugs, we may recommend Phenacetin in doses of from 0.25—0.5; Antipyrin 0.5—1.0 and Antifebrin 0.25; in my opinion Phenacetin is the best, Antifebrin is apt to produce palpitation and Antipyrin in many case reduces the appetite. In order to be quite sure of the course of the fever, which is indispensable to the treatment of each individual case, the body temperature should be taken for 15 minutes every two hours, from 8 in the morning till 10 at night, either in the axilla or the rectum. As a general rule one can distinguish, according to Brehmer, between fever with chill and fever without chill. In the latter case, when we have to do with an unimportant rise of temperature lasting a few hours of each day only, the patient should be directed to keep himself absolutely at rest for one or two hours before the time when the feverishness has begun on previous days, and also during the time while the high temperature lasts. The patient may either rest on a comfortable chair in the open, or, if the weather be unfavourable, on a verandah or on a balcony, or even on a sofa in a room with a wide open window. During the time of freedom from fever, he may take gentle walks but preferably upon level ground. If rest is not sufficient to overcome the fever, then one may give the patient a large glass (one-sixth of a litre) of Hungarian wine at a time, one hour before the onset of the fever, and perhaps a second glass after the temperature has begun to rise; if the fever still continues to 37.6 (99.8° F) one may apply the ice bag over the cardiac region. In the cases where the fever comes on during the mid-day or the evening meal, the patient should be instructed to take the meals in his own room and not at the common table. In such cases also Phenacetin is very suitable, in doses of 0.25 one hour before the meals. If the febrile condition lasts far into the night and prevents sleep, one must try the ice bag, which may be kept applied to the chest for as long as it can be tolerated, or one may give a powder of Phenacetin, which will reduce the temperature and thereby induce sleep. For high fever, the treatment is very much the same, with this difference only, that the patient should keep himself at rest for the whole day, either lying down on a sofa in the verandah or in a

room with wide open windows. Besides this, one must make more use of Antipyretics if fresh air, ice and wine do not act sufficiently, and if the fever is undermining the constitution. The remedies should be used as much before the onset of the fever as during the febrile hours, but only in small doses sufficient to keep the temperature at about (38°) 100.4 F. Patients in the last stages of disease, whose physical powers are considerably reduced, had much better remain in bed in a well ventilated room.

As regards the fever associated with chill, the treatment consists first in the reduction of the chill rather than of the fever. Chill, like fever, has the peculiarity that it is apt to recur at the same time every day, and by preference during the mid-day hours. In dealing with chill, one must endeavour to postpone its onset from day to day to a later hour, until it ceases to appear altogether. With this object, the patient may be sent to bed early in a well warmed room with closed windows, he should be forbidden to do anything that may give rise to chill, such as washing in cold water, taking cold drinks, changing of linen, handling cold objects, &c., beyond that, he should be given about an hour before the time when the chill has previously come on, one or two glasses of Hungarian wine or hot spirits and water, so that, supposing that the attack has begun on previous days at 10 in the morning, the first dose of wine or spirit should be given at a quarter past nine, and the second dose at a quarter to ten. The windows should not be re-opened for at least an hour after the cessation of the rigor. The patient may then use the ice bag to the chest and may afterwards get up, but should take another glass of wine or spirit before doing so. After the rigors have been checked, the fever itself can be dealt with as already described. In the case of fever occurring suddenly after catching cold, the patient should be sent to bed immediately and allowed to sweat freely, and kept for some days in a well ventilated room, wine and subsequently Phenacetin being used at the same time. In this way Fever can in most cases be subdued in a short time, and catarrh cut short, but it is especially important since every fresh lung catarrh, even the most trivial, may lead to the formation of a fresh nucleus of disease. If by this treatment the fever be not overcome in a few days, one must then turn to the methods already given in the case of continuing fever. In dealing with high temperature, the maintenance of the patient's nutrition must be specially kept in view. In the cases where loss of appetite amounts to repugnance to all kinds of food, one must insist upon a slop diet as far as possible, or better still, a purely milk diet.

Sweating.

Sweating, which in febrile patients may come on with the fall of the temperature, may be checked by dry or moist friction. These means, as also Atropin, Agaricin, Salicylic Acid in powder, and above all, Milk with Cognac (two to three teaspoonsful to one glass of milk which the patient should take the last thing at night, and repeat during the night if necessary), are also good remedies for reducing night sweats. But fresh air is for this purpose the one great requirement. The patient must sleep in a well ventilated room, if possible, with a half open window, and only with light bed-clothes over him as far as the chest, the hands being kept outside the cover.

Cough.

To overcome the cough when it is dry in character and occurs in spasmodic attacks, it is above all, necessary to make the patient understand how he may subdue the irritation, which gives rise to the attack. A small gulp of cold water, milk or linseed tea, a bit of sugar or chocolate, or a pastille of iceland moss quickly taken into the mouth; a deep inspiration and holding of the breath; but above all, strength of will, may often succeed in overcoming the irritative sensation and in staving off the attack. Under no circumstances should Morphia be resorted to at every onset of the cough. If, indeed, the irritation is so great that the patient cannot sleep on account of it, then a small dose of Morphia, or better still, Codeia, may be given at night. In such cases also an alkaline water, such as Seltzer, with hot milk, may do good, especially with a compress for the night. If the cough comes on after eating and irritates the patient to actual vomiting, then absolute rest should be ordered immediately after the mid-day and evening meal, and in these cases also a small dose of Morphia or Codeia directly before eating, would be appropriate. In all cases, however, where the expectoration is difficult, systematic hill-climbing has a very good effect upon its excretion. For cough, which is associated with abundant sputum, the inhalation of Oil of Turpentine is effective (one teaspoonful in a dish of hot water). Special treatment is required for the cough which very often occurs in consumptives as a result of pathological changes in the upper air passages. Very special attention must under all conditions be paid to the upper respiratory organs of consumptive patients (Nose, Naso-pharynx, Pharynx and Larynx).

Equal attention must be given to the changes in the nose, the swelling and thickening of the turbinals which interfere with the nasal respiration, which is so essential for consumptives, as also to the chronic naso-pharyngeal and pharyngeal catarrh with their unpleasant associated symptoms—the distressing coughing and hawking, which not unfrequently ends in vomiting—and especially to the tuberculous changes in the larynx, and all these must be relieved by local special treatment since they have an extremely harmful effect upon the general condition of the patient.

Hæmorrhage.

Hæmorrhages, which usually alarm the patients to a considerable extent, call for immediate medical aid, if only to pacify the patient.

For practical purposes, we may distinguish between Blood spitting, Hæmorrhage and Sudden Hæmorrhage. Since blood spitting which occurs for several days in succession, is often the fore-runner of a more important Hæmorrhage, the patient ought always to inform the physician, even when the merest red stain appears in the sputum. When blood spitting has appeared, the patient should be instructed, as soon as it has been ascertained that the blood does not come from the nose, mouth or larynx, to keep himself as much at rest as possible, either sitting or lying in the park on a comfortable garden chair or in the Lounge, on the balcony, or in a room with widely open windows. The taking of all hot or stimulating drinks and especially alcohol, must be forbidden. Small doses of Morphia or Codeia may be given if the cough is severe. This forms the routine treatment in cases of blood spitting. An exception must, however, be made in the case of congestive hæmorrhages such as may occur from cardiac weakness, and which recur over a long period, chiefly on waking in the morning. In these cases an exactly opposite method of treatment is needed—viz ; the use of douches, moderate hill-climbing, deep-breathing and wine-drinking, and besides these, the patient should be directed to put an ice-bag over the cardiac area for two hours every morning and evening. Of drugs, Digitalis may be given.

In the case of a hæmorrhage in which the patient brings up larger quantities of blood, he must at once, without any preliminary examination, be put to bed in as cool a room as possible. An ice bag should then be placed over the region of the heart and subsequently a second one over the part of the lung from which it is supposed that the bleeding has come. He should further have some

small pieces of ice to suck and a subcutaneous injection of Morphia to soothe the cough (0.02). Absolute stillness must of course be observed. The diet should at first consist entirely of milk. One quarter of a glass being given every quarter of an hour so that the daily consumption may amount to three or four litres. If sweet milk cannot be tolerated, then sour milk or butter milk may be used. The bowels must be kept closed by means of opium (Tinct: Opii.min: 3. Three times a day). Only after the second day should any enema be given, and it is then best to begin with a small one of about 200 gr. (about six ounces at a temperature of 32 to 34° Reaumur, 105 to 109° Fahrenheit) of water, which the patient should retain for a time in the bowels, to be followed by a larger injection of about three quarters of a litre of water. The patient must avoid all straining during evacuation.

For long continued hæmorrhage the following drugs may be employed, besides Morphia—Ergotin (dialysatum) either internally or by subcutaneous injection or Hydrastis Canadensis. The patient should only be allowed to get up when the sputum has been free from stain for two or three days in succession, but even then he should apply the ice-bag night and morning to the heart's area and only after a week should he be permitted to go out, at first only in the winter garden and later on in the open air.

In Sudden Hæmorrhage in which the blood often streams through the mouth and nose all the means must be instantly applied which have already been recommended for hæmorrhage, and in addition hot bottles must be placed to the feet and if necessary the limbs should be bandaged with a neckerchief or an Assalini's tourniquet.

As the expectoration of blood gets less but the obstruction in the lungs becomes greater, so that dyspnoea and cyanosis come on, the patient must be encouraged to cough up the blood which collects in the bronchi, and in cases where coagula have formed in the larynx and upper air passages and threaten to cause death by suffocation the finger should be introduced into the larynx and the clots removed, while Champagne and other stimulants are applied. As soon as the momentary danger is passed the patient should be further treated in the same way as for hæmorrhage. When the sudden hæmorrhage has been successfully overcome the patient should not leave his bed until the sputum has been clear for at least a week and even then should only remain out of bed for an hour, gradually increasing the time on the following days. He should keep the ice-bag constantly applied to the chest, at first, for the whole day and later on, only morning and evening. In the second week he may venture into the winter garden and only after

that into the open air. If a rise of temperature should follow an attack of sudden hæmorrhage it must be treated as already described under the heading of Fever.

Stomach and Bowel Complications.

Disturbance of function on the part of the stomach and intestines constitutes, next to fever, the most unfavourable symptom, and calls for immediate relief, since, if allowed to continue, it undermines the strength of the patient and hastens the progress of the disease. The employment of a suitable dietary plays the most important part. If milk causes digestive disturbances it must be made more digestible, if there be a tendency to diarrhœa, by the addition of two to three teaspoonsful of Cognac, one-fifth part of lime water, one-quarter to one-half of coffee (acorn coffee) or water-gruel, or, if there be tendency to constipation, diluted with Seltzer water, Biliner water or Apollinaris.

In many cases Kefyr may be substituted for milk. When there is entire loss of appetite and especially with high fever a complete or partial slop diet should be ordered for the patient consisting of Milk, Kefyr, Tea, Cocoa, Broth, all sorts of gravy, milk, farinaceous and vegetable Soups, Barley and Rice water, Water-gruel with addition of yolks of egg or Liebig's Meat-extract, Beef-tea, Meat-juice, &c. ; to be recommended also are Schering's Malt Extract, Wine and Meat Jelly, Rusks, soft-boiled Eggs and grated Raw Beef in sandwiches. Under this diet the patient must take a little as often as possible in the course of the day somewhat in the following manner :—Early, at 7.30, tea with rusk or well-baked white bread and a glass of milk (a small sip of the latter every few minutes) ; at 9.0 o'clock, a glass of milk ; at 10.0 o'clock, broth with an egg or meat-juice and a glass of wine ; at 11.30 a glass of milk with rusk ; at 1.0 o'clock, soup, raw beefsteak sandwich, wine jelly and a glass of wine ; at 3.0 p.m., a glass of milk ; at 5.0 o'clock, a glass of milk with rusk or bread ; at 7 p.m., soup, soft-boiled egg, a glass of wine ; at 9.0, a glass of milk with cognac. In other cases again where the patient exhibits antipathy to hot dishes, these must be replaced by cold meat, especially by ham, cold roast meat or chicken and the like. And here the patient must be especially warned to eat as much vegetable as possible as the latter materially assists the digestion of meat.

The forms of stomach disturbance which declare themselves especially by loss of appetite and by sensations of pressure in the epigastrium and which occur fairly often in consumptive patients in consequence of deficient innervation of the stomach and also

insufficient secretion of Hydrochloric Acid, are best treated by bitter remedies and Pepsin (Schering's Pepsin Wine) and by Hydrochloric Acid in addition to the restricted diet, and also by warm moist compresses to be laid over the gastric region directly after eating. The latter, together with Subnitrate of Bismuth, Extract of Belladonna or even Dover's powder act most favourably in those cases where gastric pain is apt to come on after every meal. If fermentative processes are the cause of the digestive disturbances, which are chiefly recognisable by foul eructations, small doses of Guaiacol or Creosote may be used. That the latter may in certain cases by exciting the appetite have a favourable effect upon the general condition of the patient and thus upon the course of the disease, is not to be denied. But, from my point of view it is not right to ascribe to these drugs any specific action upon tuberculosis as a whole, as has so often been done. In many cases of complete loss of appetite with general exhaustion, such as may often be noticed in young female patients, arsenic may do good service.

In the case of persistent constipation, abdominal massage and plain water enemata should be used in the first instance, along with proper diet, before recourse is had to any of the weaker purgatives such as Magnesia, Rhubarb, Tamarind, Sagrada wine, &c. Great care must be exercised in the use of purgatives, as a chronic constipation may sometimes be converted into diarrhoea. The treatment is always more difficult where the diarrhoea occurs as the result of intestinal tuberculosis. In addition to the strictest diet (and in these cases Kefyr three times daily is very useful) hot fomentations should be applied to the abdomen, and of drugs, Salicylate of Bismuth or Tannin with Opium or the recently introduced Dermatol with Opium may be given; over and above these, the Greek wine Camarite and also dried Bilberries which may be given either in the form of Bilberry wine or in pastille form, or as a decoction.

This then is a general outline of the symptomatic treatment of Consumption as it is carried out in Sanatoria.

X.

Hydropathic Treatment.

In conclusion we have yet to mention the Hydropathic Treatment of Consumptives which consists in the employment of warm baths, ablutions, cold friction and douches. As regards warm baths, these are not contra-indicated for consumptives as a general rule; not only the slight cases but also the febrile patients should take a warm bath from time to time to keep up the nutrition of the

skin which in any case will be reduced owing to the diminished nutrition of the whole organism. The temperature of the baths must correspond to the temperature of the patients, that is, must be higher for febrile cases than for those with normal temperature. Ablutions may, in the same way as baths, be brought into use for all patients without exception. The procedure consists in washing individual parts of the body, especially the breast and the back, with a sponge wet with water at the temperature of the room, followed by rapid drying of the respective parts with a rough towel or a horse-hair glove. In certain cases one may substitute dry friction for the ablution ; in cases of night sweating dilute spirit or vinegar (about one part in three) should be used instead of pure water. For very sensitive patients, it is best to begin with luke-warm water (20° Reaumur= 77° Fahrenheit) and to pass by degrees to colder water. The ablutions should be made in bed in a room which should be well warmed during cold weather, generally between 7 and 8 a.m., and in some cases in the evenings also. For cold friction, a distinction must be made between friction of the whole body and of individual parts. The former is carried out in the following manner : The attendant or nurse wraps the patient, who must be standing by the bed entirely stripped, in a sheet which has been wrung out of cold water, then rubs the whole body rapidly and firmly, then removes the damp sheet, wraps the patient in a second dry sheet and rubs him once again. After this procedure is completed the patient dresses himself quickly and goes for a good walk in the open air or in the winter garden during bad weather. The cold frictions must be carried out with the greatest rapidity in order to guard against chill and they are only indicated for patients whose general condition is relatively good. Instead of the friction of the whole body one may order partial friction which is carried out in the same way as the former the only difference being that each part in turn should be rubbed with a towel as the patient lies in bed.

Cold douches ought only to be used, as a general rule, for the mild cases with fairly strong constitution and always in the presence of the Physician. Cold spring water is used for the douches, applied with considerable pressure to the surface of the body either from above as a rain or cascade-douche, or from the side, as a jet. The douches are generally applied in the morning between seven and eight after the first breakfast. At first they should last only five seconds but, little by little, according to the condition of the respective patients, they may be extended to twenty seconds or, at the outside, forty seconds. Directly after the douche the patient should be rubbed with a rough dry sheet and should then dress

himself and go for a good walk in the open air or in the winter garden. Mention must, finally, be made of Wet Packing of the Chest which in the treatment of phthisis may often be employed with success. Distinction must be made between the stimulant and the antipyretic wet packing. For the antipyretic packing, square or triangular compresses wrung out of ice-cold water should be laid on the front of the chest—if triangular the point of the triangle should point towards the epigastrium and the two ends of the base thrown over the shoulders to the back. These compresses must be frequently renewed. They may be used in cases of high fever, hæmorrhage, or dyspnoea, consequent on heart failure which, in advanced cases, is often present.

To the forms of stimulant chest bandages, belong the Preissnitz bandage and the crossed bandage. The Preissnitz bandage consists of a wet compress covered by a sheet of gutta-percha tissue which overlaps the compress by at least two fingers' breadth, the whole being covered by a flannel binder. For the crossed bandage two linen bandages are required from two to two-and-a-half metres long and from sixteen to twenty centimetres broad. One of these bandages is to be dipped in cold water, thoroughly wrung out, and then applied in the following manner:—From the left axilla across the front of the chest to the right shoulder, wound round that shoulder and then across the back to the left axilla again, then across the breast to the right axilla and across the back to the left shoulder and over the parts of the chest still uncovered. The bandage may be fastened by narrower strips attached to the end and then the other dry bandage is applied in the same way as the moist one, great care being taken to see that the first bandage is completely covered. (Winternitz).

In the foregoing descriptions I have endeavoured to present the general principles of the treatment of Consumption, but chiefly that which is known as the Brehmer-Dettweiler Method, after its founders, and which to-day is recognised as the only rational method and which is practised in all the Sanatoria. To what extent this method has been crowned with success, the following statistical statement taken from the Reports of the chief Sanatoria will shew.*

XI.

Statistics of Sanatorium Treatment.

In Dr. Brehmer's Sanatorium at Goerbersdorf, 5,440 patients were treated during the eleven years from 1876-1886. Of these, no detailed reports are available of 408—there remain therefore 5,032 which may be tabulated from Dr. Brehmer's notes as follows.*

* Manasse: Die Heilung der Lungentuberculose durch diätetisch-hygienische Behandlung in Anstalten und Kurorten.

Stage of Disease.	Number.	Cured.	Nearly cured.	Total.
I.	1390 (27.62%)	387 (27.8%)	430 (31%)	817 (58.8%)
II.	2225 (44.21%)	152 (6.83%)	325 (14.6%)	477 (21.43%)
III.	1517 (28.17%)	12 (0.84%)	33 (2.3%)	45 (3.14%)
	5032	551 (11%)	788 (15.6%)	1339 (26.6%)

In order to make sure how long the cure lasted in the case of those discharged from the Institution as cured or nearly cured, special inquiries were instituted in the year 1890 which went to prove that in five cases the cure had lasted for twenty to twenty-nine years, in fifty-two cases from twelve to twenty-one years, in thirty-eight cases from seven to twelve years. It was further ascertained that of forty patients who were discharged from the Sanatorium in the year 1876 as cured or nearly cured, and of whom particulars could be obtained, there were in 1890, or fourteen years afterwards, still twenty-five persons living in good health, one suffered from Fibroid Phthisis, one died in 1886 from Phthisis, while thirteen others had died from unknown causes.†

In the Falkenstein Sanatorium 132 out of a total of 1,022 patients were discharged as cured—13.2 per cent; 110 as nearly cured—11.0 per cent, giving a total of 242—24.2 per cent. Later investigations have shewn that of 99 patients who left the institution as cured, 72 were still living from three to nine years afterwards in perfect health while in fifteen cases there had been relapse. (Of these twelve were subsequently cured.)‡

In Dr. Haufe's Sanatorium at St. Blasien corresponding inquiries into the fate of 324 patients who had been treated in the Sanatorium during the years 1878 to 1889 shewed that of 288, about whom information could be obtained, 72 were living in good health from three to twelve years later, 201 had suffered more or less from pulmonary catarrh from two to twelve years, without however having had to suspend their ordinary business; in twelve cases the health had got worse and five patients had died.*

Finally a statistical statement from Dr. Driver's Sanatorium in Reiboldgrün of 2,000 cases gave the following results: 13.66 per cent cured, 28.02 per cent materially improved, 28.60 per cent improved, 25.20 per cent unimproved, and 4.52 per cent died.*

† Wolff und Saugmann: Ueber die dauernde Heilung der Tuberculose, 1891.

‡ Dettweiler. Bericht ueber 72 seit 3—9 Jahren in Falkenstein völlig geheilte Fälle von Lungenschwindsucht. 1886.

* Manasse. l.c.

* Driver. Volkssanatorien für Lungenkranke. Deutsche Medicinal-Zeitung. 1890.

The foregoing figures and those especially emanating from Goerbersdorf and Falkenstein which relate to over 6,000 cases prove, on the average, 25 per cent of cures, without having regard to the cases of improvement which often are equivalent to cure in the long run. Equally important also is the information derived from the Goerbersdorf Sanatorium that of all patients who stayed more than a month in the Sanatorium, more than eight per cent were still in good health at the end of fourteen years. When one comes to consider that only a short time ago Consumption was held to be under all circumstances an incurable disease, one cannot but regard such results as these of the Sanatoria, as successful. It must further be taken into consideration that, as the above statistics prove, most of the patients come to the Sanatorium in the first instance in an advanced stage of disease (of 5,032 cases at Goerbersdorf only 1,390 were in the first stage). It is thus greatly to be desired that the number of Sanatoria which hitherto has been but small in comparison with the number of consumptives should increase as time goes on, so that in all counties Sanatoria for Consumptives may be established and especially Sanatoria for the Poor. The number of those who become victims to Tuberculosis will then assuredly become smaller and the words of Virchow will be fulfilled with which he closed his address on the 28th of October, 1848, that "it is the duty of Mankind to overcome Tuberculosis just as Scurvy has been overcome." That it is precisely the Sanatorium treatment which is the best means of overcoming it is shewn by the statistics from England where since the establishment of numerous special institutions for Consumptives the mortality from Tuberculosis has markedly decreased.*

"The amount which a Physician may spend in the course of a circular tour through the chief watering-places and climatic health-resorts will bear golden fruit not only to himself, but especially to his clients," writes Ziemssen in his *Clinical Lectures on the Treatment of Phthisis*. And rightly, for as in the treatment of every other disease, equally, and perhaps more so, in the case of tuberculosis, the precise conditions of the health-resort or bath to which the patient is to be sent, must be taken into consideration. But for this it is necessary that the Physician should himself be well acquainted with the respective places. The same argument holds good for Sanatoria for Consumptives. Although, as a matter of fact, the

* One great feature distinguishes the English Hospitals for Consumption from the Sanatoria, viz:—none of them are situated at a similar elevation above the sea. In spite of this drawback, a vast amount of consumption is checked, even in large towns, and it is more than probable that this amount would be doubled if only such Hospitals could be built on the slopes of the hills of Surrey, Sussex, and Hampshire or in the many suitable districts of Wales, Yorkshire, and Scotland. (Trans.)

method of treatment depending upon diet and hygiene is much the same in all these Institutions, still in the choice of a Sanatorium there are points to be considered such as the position of the building and its climatic peculiarities, the external and internal arrangements of the establishment, the style of the catering and attendance, as also the cost of living. All these are matters in which one Sanatorium may differ more or less from another and they should be well considered before the patient is sent. Having thus presented in a general way the chief features of Sanatorium treatment I would offer in the following pages a short description of some of the largest and best known Sanatoria in Germany and Switzerland which I have recently visited personally. I begin with Dr. Brehmer's Establishment at Goerbersdorf in which I acted for nearly five years as Assistant.

Goerbersdorf. Dr. Brehmer's Sanatorium.

Goerbersdorf, a village in Prussian Silesia, is 561 metres above sea-level in a mountain valley surrounded by high well-wooded hill sides, the so-called Waldenburg Highlands. In the part of the valley most sheltered from the wind lies Dr. Brehmer's Establishment consisting of a central building (the old and new Kurhaus), three villas in the park and a few houses in the village. In addition to over 200 larger or smaller appartments for patients there are in the central building, salons intended for general use, two dining-rooms, the reading-room, two smaller sitting-rooms, the cold and the warm winter garden, and also the palmhouse. The warming of these large areas is partly effected by means of tiled stoves, heated with wood, and partly by central heating. (Warm water and hot air). Ventilation is supplied in the Salons by means of Kosmos-ventilators and in the smaller rooms by special arrangements. The covered balconies which are attached to many of the rooms in the new Kurhaus, some verandahs and also a small lounge in the park are used for rest treatment. The Sanatorium possesses no larger lounges and for this reason, that Brehmer was always an opponent of such lounges as he considered that it was much more advantageous to the patient to rest quite alone in his own room with an open window in preference to mixing with other patients in a common area. From my point of view this can only apply to the advanced cases ; for mild cases such lounges seem to me to be well adapted since they enable the patient, even in bad weather, to spend his time in the open air instead of in the common reception-rooms. The Sanatorium is surrounded by a well-kept park of about 300 acres,

which extends through a noble pine wood to the top of the mountain. There are in the park over fifteen kilometres of artificial walks which lead in various gradients up the hill and are provided at every few paces with numerous benches. Several arbours afford opportunity for walkers to shelter and recover breath.

Always holding fast by the conviction that in the treatment of phthisis the most important object is to strengthen the heart, and believing hill-climbing to be the best means to attain it, Brehmer paid the greatest attention, when he designed the Sanatorium, to the walks and footpaths, and to the laying out of the whole park, which may truly serve as a model to all other Sanatoria. The paths intended for methodic hill-climbing are all of a very gentle gradient and all lead direct from the Sanatorium up the hill and not down. This latter condition is, according to Brehmer, a most important one, since the patient by ascending at the beginning of his walk and only beginning to descend on his return, can more easily avoid over exertion and cardiac distress than if he took his walk in the opposite direction. For the employment of cold douches, besides the appliances in the central building, there is a second set in a separate cottage in the park, a few hundred yards from the main building. The patient, therefore, has to take a short walk up hill before he takes the douche which, in some cases, is desirable. All the other arrangements both inside and outside, fulfil for the most part all the requirements which modern hygiene demands for a Sanatorium for Consumptives. It remains yet to be mentioned that a large chemical and bacteriological laboratory and also a meteorological institute are provided for scientific observations. The Superintendent of the Sanatorium is Dr. Achtermann, a former Assistant of Brehmer. The method of treatment employed in the Institution rests upon the principles clearly laid down by Brehmer, as already described. For the climatic or open-air treatment the chief principle is to permit the patient to spend as much of his time as possible in pure fresh air. The advanced or febrile cases lie out in the park or on balconies, or in rooms with widely open windows, the mild cases must walk about for some hours daily, practising methodical hill-climbing. During the remainder of their time they may rest either in the park or on the balconies or in one of the large reception-rooms. The number of hours which are to be devoted daily to walking exercise must depend upon the condition of the patient and the state of the weather. On very windy and cloudy days this time must be very limited, otherwise neither rain nor snow nor frost need prevent the daily walk. Patients whose physical strength is not equal to longer continuous exercise in the open air, can take their walks in cold

weather and in winter in such a way that they go out for a short time and then return to the house, and only when they are thoroughly rested should go out again. In this manner, even the weaker patients may spend some time daily in the open. In summer, the patients sleep with the windows entirely or partially open and in the same way in winter, there is provision for ample ventilation. As regards the catering for the patients, the dietary is nourishing, somewhat fatty, rich in vegetables, and very subject to variation. Many patients, and especially foreigners, who are accustomed to a different style of cookery, have in the first instance to accustom themselves to the local method of preparing food, but that the dietary is a rational one is proved by the fact that nearly every patient is found to gain in weight. Five meals are taken daily. The mid-day meal consists of soup and three other courses, the supper of one course. Milk and Kefyr which are supplied to the patients in considerable quantity are obtained from the dairy of the establishment. Of alcoholic drinks the patients are restricted mainly to wine; exceptionally, and as a rule only after supper, beer is supplied; cognac is only taken when diluted either with milk or with water. The hydropathic treatment is employed for nearly every patient in accordance with the conditions of health, either in the form of douches or ablutions or cold frictions. The so-called "jour medical" of an ordinary mild case may be represented somewhat as follows:—Between 6.30 and 7.30 in the morning, ablutions or cold frictions in bed (douches only after breakfast); between 7.0 and 8.0, first breakfast in the breakfast-room, then a good walk up the hills till 10.0 o'clock; at 10.0 o'clock, lunch. In the summer, many patients take their lunch with them and remain out in the hills till dinner time, or they occupy themselves in the time between lunch and dinner in the lower parts of the park, partly in walking on more level ground or resting on benches, in hammocks or in garden chairs. Every one is required to rest for half-an-hour before dinner so that he does not come tired to table. At 12.30 comes dinner, and after that the patients rest in the park till 4.0 o'clock (in winter they rest in the house till 3.0 p.m.), and then go for a walk till 4.0. At 4.0 o'clock, afternoon tea and then a walk till 5.0 or 6.0 o'clock according to the time of year. Rest from 6.0 to 7.0 in summer, in the open and in winter, in one of the large common-rooms. Supper is taken at 7.0 o'clock; in summer the patients go once more out of doors, in winter they remain in one of the large reception-salons in the Sanatorium. At 9.0 or at the latest 9.30, every one has to go to bed. As regards the special climatic features of Goerbersdorf, it may be classed as a true mountain climate

from its elevation above the sea. As already stated, no health resort in Germany can be regarded as having a mountain climate which stands at a less elevation than 500 metres. The Goerbersdorf climate is therefore a moderate hill-climate and as such is free from some of the contra-indications which exist for the higher altitudes such as Davos (1560). As in all mountainous districts so also in Goerbersdorf, the most unfavourable time of year for patients, is the change from winter to spring, the time, in fact, when the snow begins to melt from the hills. This takes place usually at the end of February or the beginning of March, and lasts in comparison with the higher altitudes a very short time, scarcely two to three weeks. Finally it may be mentioned that the expense of living in the Sanatorium is not excessive in comparison with the cost in other establishments; it amounts on the average to 50 to 80 marks (£2 10s. to £4) per week, according to the size and situation of the rooms. Of late a so-called second class has been introduced in which the cost is considerably less, about 130 to 150 marks (£6 10s. to £7 10s.) per month.

Dr. Roempler's Sanatorium.

Besides Dr. Brehmer's establishment there exists a smaller Sanatorium belonging to Dr. Roempler. It is constructed for about 120 patients and consists of a Kurhaus and two villas. Near the Kurhaus is a large Lounge (Liegehalle). The park which surrounds the institution is, in comparison with Dr. Brehmer's, relatively small and newly laid out. In other respects the methods of treatment and the catering for the patients, as also the expense, are about the same as at the larger establishment.

Falkenstein.

The Falkenstein Sanatorium in the neighbourhood of Frankfort-on-the-Main, situated on the southern slope of the Taunus hills, 400 metres above sea-level, is surrounded with hills on the west, north and east, while the south side faces the valley. The Sanatorium consists of one main building and two annexes which are connected with the former by two long colonnades. These are intended for promenade during bad weather. A roomy lounge on the south side of the building and several pavilions serve for carrying out rest treatment. In the main building is the winter garden and the public assembly rooms, the large dining-room being in a separate part. The heating in winter is partly by central furnaces (steam and hot

water heating) and partly by the ordinary stoves, and there are special ventilating arrangements for keeping up the supply of pure air. On the south-west side of the Sanatorium, a moderately large park extends towards the valley and is continuous with a wood belonging to the Commune of Falkenstein. Neither the park nor the woods about it contain any number of pine trees, but mainly oaks and beeches. The footpaths almost all lead down the hill from the house so that the patient has first to descend and afterwards to ascend in taking walks which, as already stated, is undesirable for consumptive patients. All the other arrangements of the Sanatorium are good, and especially the large corridors for rest treatment which were first introduced as a means of treatment at Falkenstein and have since been adopted by other institutions. The Medical Director of the Sanatorium is Dr. Hess, and the Consulting Physician is the Geheimer Sanitäts-rath Dr. Dettweiler. The open air treatment differs from that at Goerbersdorf perhaps in one respect, that the mild cases lie down more in the open air and walk less, while at Goerbersdorf great stress is laid upon continued physical exercise. Febrile patients, with the exception of those in an advanced stage, lie out in the open corridors from early morning till late evening, frequently in spite of rain, mist and snow. That uninterrupted rest in the open air must be of benefit to febrile patients does not admit of doubt, but in my opinion it can be equally well attained if the patient, especially in winter, lies on a comfortable sofa at an open window. He is thus, at any rate, spared the unnecessary exertion of going down to the verandah or of leaving it for meal-times and at bed-time, which is for the most part, both troublesome and harmful. For non-febrile cases, on the other hand, such lounges are very well adapted, since they render it possible for the patients to remain in the fresh open air, during the time when they are not taking exercise, even in the worst weather. The catering for the patients at Falkenstein is very good. The patients take four meals a day; first and second breakfast (lunch), dinner and supper. Dinner consists of soup and four or five courses, supper, of soup and two courses. Of alcoholic drinks, besides wine and beer, the patients are allowed cognac in comparatively large quantities, and for the most part undiluted. Dettweiler prescribes neat brandy, especially for the anæmic patients who are particularly sensitive to cold, in the form of small doses, a few teaspoonsful every two hours, which, in his opinion, have a favourable effect upon the condition of the patients. The climate of Falkenstein can hardly be classed as a hill climate since the elevation is only 400 metres and, as already stated, only such places in Germany as lie at least 500 metres above the sea can

lay claim to the title of mountain climate. The air is, however, pure, fresh, and free from dust, and this, from Dettweiler's point of view, is the chief consideration in the climatic treatment of Phthisis. The cost of living at the Falkenstein Sanatorium is greater than at Goerbersdorf. It ranges from 80 to 100 marks (£4 to £5) per week.

Dr. Turban's Sanatorium at Davos.

Dr. Turban's Sanatorium at Davos, 1,573 metres above sea-level, lies on the south-west side of the climatic station of Davos-Platz. The Sanatorium, which consists of a central building and two villas, has sixty rooms for patients besides the large reception-rooms for general use, the greater number of which lie to the south-side of the building, and are provided with balconies. The internal arrangements of the establishment are, on the whole, good, and this may especially be said of the central steam-heating, the electric lighting and the means of ventilation. On the south side of the house there is a large terrace which is intended for rest treatment. The grounds of the Sanatorium are, however, very limited so that the patients have to take walking exercise partly in the adjoining grounds of the Davos Kur-Verein, in which the paths are laid out on a very steep gradient and possess an insufficient number of seats, so that they do not fulfil the necessary requirements for systematic hill-climbing. Dr. Turban is the Director of the Sanatorium. The method of treatment follows the lines laid down by Brehmer and Dettweiler. Febrile patients lie down for the most part in bed close to open windows, while the mild cases spend the whole day either walking in the open air or lying out on the terrace. The catering for the patients is very good and resembles that of Falkenstein.

The " Jour Medical " of an ordinary patient would be represented somewhat as follows :—Early ablutions or cold friction or douche ; between 7.30 and 8.30 first breakfast, then a walk on the hills till lunch time (10.30) ; after lunch a second walk till 11.30 ; from 11.30 from 1.0 rest on the terrace ; at 1.0 dinner ; after that, rest on the terrace till 4.0. At 4.0 o'clock, afternoon tea followed by a walk till 6.0 ; rest from 6.0 till 7.0 ; supper at 7.0 o'clock ; after supper, rest on the terrace again till 10.0 when everyone retires to bed.

Davos has a high altitude climate which is distinguished chiefly for its large amount of sunshine, its pure, dry and still air and its low barometric pressure. But the fact must not be overlooked that of late years in consequence of the ever greater influx of visitors and the consequent extension of the place, the air has lost considerably in purity so that Weber has rightly observed " Davos may be ruined

by its own attractions." The most favourable time for staying at Davos is the Winter season ; in Spring, from about the middle of April, is the least pleasant time when the snow begins to melt, and this lasts for some weeks. The Summer is, for the most part, cool but in consequence of the want of shade it is not so agreeable as in the climatic stations at a lower level, with well laid out parks and pine woods ; the first part of the autumn is very beautiful, while the second part, the change to winter, is often marked by bad weather. Therefore, patients who are recommended to winter at Davos, should be sent there in the early autumn, so that they become acclimatised before the bad weather begins. The climate of Davos does not suit all classes of Consumptives alike. It is contra-indicated for anæmic patients and those who are very sensitive to cold and for those who suffer from feeble heart's action, or who have any actual cardiac lesion, nor does it suit very nervous individuals, or old people, or patients in an advanced stage of the disease, and especially those who have any laryngeal or intestinal complication, much emphysema or albuminuria. Davos is generally visited during the winter. Dr. Turban's institution is however open in summer as well, and as he himself personally assured me, the results of treatment are no less good in the summer than they are in the winter. The cost of living in the Sanatorium is about the same as at Falkenstein. About £4 to £5 weekly.

Hohenhonnef.

The Sanatorium of Hohenhonnef, on the Rhine, lies 200 metres above sea-level on the south-west slope of the Siebengebirge. The institution, which has only recently been built, is distinguished for its comfortable and convenient fittings, which represent all the newest hygienic requirements. Less advantageous, however, is the site of the building which, standing high up on the hill, is too little protected from wind especially as the park and hill side surrounding it are but thinly covered with trees. The climate, on account of the lesser height above the sea, is milder than that of the recognised hill climates. The establishment is conducted by Dr. Meissen, a former assistant of Dettweiler. The methods of treatment, the dietary of the patients, and the cost of living are about the same as at Falkenstein.

Reiboldsgrün.

Dr. Driver's Sanatorium at Reiboldsgrün in Saxony, 700 metres above sea-level, lies in a mountain valley surrounded on all sides by wooded heights and consists of several houses which together afford accommodation for more than 100 patients. Over and above the

favourable climatic conditions, the Sanatorium has the advantage of being completely isolated, far removed from village or town so that every inducement towards imprudent excesses is removed. The fittings of the establishment are less comfortable than in some of the others, although everything is provided which is necessary for treatment. The method of treatment follows the principles of Brehmer and Dettweiler. The expenses are moderate. Dr. Wolff is at the head of the establishment, a former Director of Dr. Brehmer's Sanatorium at Goerbersdorf.

Dr. Haufe's Sanatorium at St. Blasien.

In conclusion, I would refer to Dr. Haufe's establishment at St. Blasien, situated 772 metres above sea-level, in a lovely wooded part of the Black Forest in Baden. The Institution, which consists of a Kurhaus and a Villa, possesses in addition to the moderate-sized common reception-rooms, sixty patients' rooms mostly provided with balconies. The balconies, as also a verandah which unites the Villa with the Kurhaus, are intended for rest treatment. The internal appointments are good on the whole, better indeed than the external arrangements where the paths intended for walking do not make a very favourable impression in winter. The general plan of treatment and maintenance of the patients is much the same as in the other Sanatoria; the climatic conditions are favourable; the expense somewhat greater than at Goerbersdorf.

These then are the largest and most important Sanatoria for Consumptives in Germany and Switzerland, or, it might be said, on the whole Continent. As we have seen, not one of them can lay claim to absolute perfection, each has its advantages and its drawbacks. If it were possible to unite the situation, the surroundings, and above all, the Park of Goerbersdorf with the internal fittings of the Hohenhonnef Sanatorium, and the dietetic method employed at Falkenstein, then, for the first time, we should have a Sanatorium for Consumptives which would approach very near to the Ideal.

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